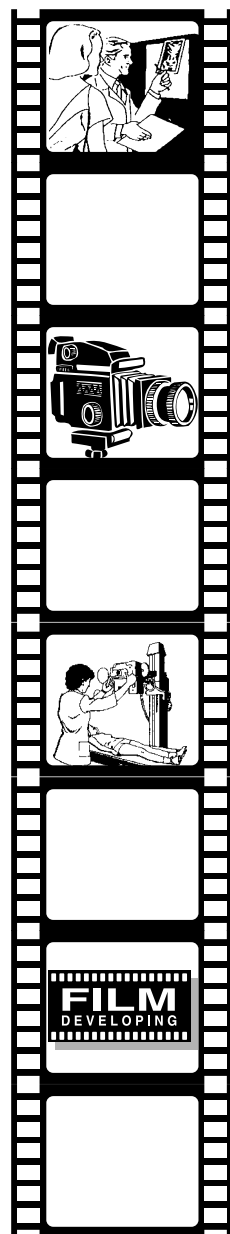


How to manage silver-bearing hazardous wastes



This brochure provides guidance on the regulatory requirements for silver-bearing hazardous wastes generated by photographic processors. References to Kentucky hazardous waste regulations have been included in brackets for convenience.

Photographic processing wastes include fixer solutions that often contain hazardous levels of silver. After the solutions have been used, they meet the definition of a “spent material” [401 KAR 31:005, Section 1(259)].

Other silver-bearing wastes that are generated by photographic processing include silver flake or silver contaminated cartridges. These wastes meet the definition of a “sludge” [401 KAR 31:005, Section 1(251)].

Is this waste hazardous?

Anyone who generates a waste must determine if it is hazardous [401 KAR 32:010, Section 2]. Photographic wastes must be evaluated for hazardous characteristics [401 KAR 31:030]. There are four hazardous characteristics (ignitability, corrosivity, reactivity and toxicity), but only the characteristic of toxicity usually applies to photographic wastes.

The test method for toxicity is called the Toxicity Characteristic Leaching Procedure or TCLP [401 KAR 31:030, Section 5]. It tests for 38 different chemical constituents, but only silver is normally considered a constituent of concern for photographic wastes.

Generators are not required to analyze their waste to determine whether it is hazardous [401 KAR 32:010, Section 2(3)(b)]. Although testing provides clear documentation that the waste is or is not hazardous, generators may use their knowledge of the waste or the waste generation process as the basis for this decision; however, the decision-making process should be well documented. Generators also may use Material Safety Data Sheets (MSDS), information received from sales representatives or other information to make a waste determination without conducting a TCLP analytical test.

Any waste is considered hazardous if it contains five parts per million or more of silver using the TCLP test method. Hazardous wastes that contain silver are given the waste code D011 in the regulations [401 KAR 31:030, Section 5] for recordkeeping and reporting purposes.

What is a generator?

Anyone who produces a hazardous waste must determine their generator status:

Large Quantity Generator - produces over 2,200 pounds (approximately three - five 55 gal. drums) of hazardous waste in a calendar month [401 KAR Chapter 32].

Small Quantity Generator - produces between 220 pounds (approximately 1/2 of a 55 gal. drum) to 2,200 pounds of hazardous waste in a calendar month [401 KAR Chapter 32].

Conditionally Exempt Small Quantity Generator - produces less than 220 pounds of hazardous waste in a calendar month [401 KAR 31:010, Section 5].

Standards for generators are tiered based on the amount of hazardous waste produced. Generators are not allowed to average the amount of waste generated monthly. Generators who produce hazardous waste infrequently must comply with the appropriate standards based on the maximum amount generated until their waste is properly disposed.

How is spent fixer regulated?

Treatment on-site by the generator to remove silver, followed by discharge to either a sewer system or via a Kentucky Pollutant Discharge Elimination System (KPDES) permit issued by the Division of Water, is subject to:

1) GENERATOR REQUIREMENTS. The spent fixer is considered a generated hazardous waste. However, the **quantity** of fixer that is generated is not used to determine the generator's status if it is managed immediately after generation in a wastewater treatment unit or a totally enclosed treatment facility [401 KAR 31:010, Section 5(3)(b)]. This means that although the waste is subject to regulation, the generator does not count it when deciding if the site is a large quantity, small quantity or conditionally exempt small quantity generator.

- Waste fixer **MUST BE** included on the *Notification of Hazardous Waste Activity* form if

the generator produces over 220 pounds of **other** hazardous waste in any calendar month. For example, a printer generating 250 pounds of regulated solvents and 50 pounds of spent fixer monthly, would identify both the solvents and fixer on the Notification form. The company is a small quantity generator based on the amount of solvent generated. Large quantity generators must also report waste fixer on the *Annual Report* form. However, the fixer would be exempt from the Hazardous Waste Assessment fee if the generator files a *Claim for Exclusion* form. This form may be obtained from the Hazardous Waste Assessment Program Coordinator at (502) 564-6716.



- A generator of waste fixer is not required to submit a *Notification of Hazardous Waste Activity* form if: (1) the waste fixer is the only hazardous waste generated on-site, or (2) all other hazardous wastes generated on-site total less than 220 pounds in a single calendar month. Spent fixer, silver flake and silver-contaminated filter cartridges are not counted in the generator's quantity determinations. Because conditionally exempt small quantity generators are not required to register, this waste is not subject to the Hazardous Waste Assessment fee.

2) WASTEWATER TREATMENT EXEMPTION. If the on-site treatment unit meets the definition of a **wastewater treatment unit**, registration as a recycler on the *Notification of Hazardous Waste Activity* form is NOT required. Wastewater treatment units are allowed to handle hazardous waste fixer under a permit-by-rule [401 KAR 38:060, Section 1(5)] if the

discharge is regulated by the KPDES program. Wastewater treatment units are exempt from hazardous waste permitting requirements if the unit discharges to a sewer system [401 KAR 38:010, Section 1(2)(b)5]. **It is illegal to discharge fixer (before or after treatment to remove silver) to a septic system.**

To meet the definition of a **wastewater treatment unit**, the silver recovery unit must:

- be regulated by either the KPDES program or the Pretreatment program. The Kentucky Division of Water administers both programs. Pretreatment programs are also subject to local water treatment program requirements.
- receive and treat/store influent that is hazardous; generate and accumulate hazardous sludge; or treat/store hazardous sludge.
- be a “tank” [401 KAR 31:005, Section 1(273)]. This means the unit must be stationary. A unit will be considered stationary if it is piped in such a way that movement is either impossible or unlikely. Units that are not stationary cannot qualify for the wastewater treatment exemption.

3) TOTALLY ENCLOSED TREATMENT EXEMPTION. If the silver recovery unit is an integral part of the photographic processing equipment, only silver flake or silver-bearing filter cartridges will be generated as wastes. This type of unit is called a “totally enclosed treatment facility” [401 KAR 31:005, Section 1(281)] and is exempt from regulation. The spent fixer that exits the unit is subject to a waste determination to see if it exhibits the hazardous characteristic of toxicity for silver. Spent fixer that has been treated in a totally enclosed treatment unit and continues to exhibit a hazardous characteristic is subject to all hazardous waste requirements including registration.



How are silver flake or filter cartridges regulated?

The silver flake generated by electrolytic recovery systems, or cartridges containing silver sludge from metallic replacement systems, routinely exhibit the characteristic of toxicity for silver. Although these are considered “sludges exhibiting a hazardous characteristic,” they are not considered wastes IF they are sent for reclamation [401 KAR 31:010, Section 2(3)(c)]. This means that they are not counted in the generator’s quantity determinations, and they are not subject to registration or use of the manifest. Failure to send at least 75 percent of the annual volume of this material for reclamation, however, causes it to be subject to regulation as a hazardous waste [401 KAR 31:010, Section 2(3)(d)].

What if I don’t recover silver on-site?

Generators who ship **untreated** fixer off-site for reclamation must (1) count it when determining their generator status, and (2) register amounts above 220 pounds per month on the *Notification of Hazardous Waste Activity* form. In addition, these generators must comply with the requirements for hazardous waste generators based on the amount of hazardous waste produced monthly [401 KAR Chapter 32].

Because the silver ions in fixer can kill or damage micro-organisms that are essential to the biological treatment process, fixer should never be discharged to sewers without permission from the local sewage treatment plant. However, an approved discharge to a sewer is exempt from hazardous waste regulations if it is in compliance with the pretreatment program.



Spent fixer should never be discharged to a septic system. Releases of spent fixer to a septic system are required by law to be reported as an environmental emergency [KRS 224.01-400]. A septic system is designed to slowly disperse wastewaters into the environment where natural biological treatment takes place. Since silver is unaffected by natural biological treatment, discharging these hazardous wastes to a septic system is considered illegal disposal. Consequences of illegal disposal include fines and the obligation to clean up or restore the damaged environment.

What are the standards for commercial recyclers?

Anyone who receives hazardous spent fixer or silver cartridges from off-site for processing and silver recovery must register as a precious metals recycler [401 KAR 36:060].

Registered recyclers who annually process 75 percent of the spent fixer received from off-site are exempt from the requirement to obtain a hazardous waste storage permit [401 KAR 36:060, Section 2(3)]. The regulatory term for failing to recycle at least 75 percent of the hazardous waste inventory on-site on January 1 of each year is called "speculative accumulation" [401 KAR 31:005, Section 1(5)]. Records must be kept showing that spent fixer is not accumulated speculatively to ensure the site will be exempt from permitting. These records are used by Division of Waste Management inspectors to confirm that the site is operating within the law.

Registered recyclers must use the manifest system. This includes signing and dating the manifest on receipt of the waste shipment, returning a signed copy to the generator and keeping a copy for their records.

Where can I get help?

If you have additional questions about silver recovery, contact:

Division of Waste Management
Hazardous Waste Branch
14 Reilly Road
Frankfort, KY 40601
(502) 564-6716

Bowling Green Regional Office
(502) 746-7475

Columbia Regional Office
(502) 384-4735

Florence Regional Office
(606) 292-6411

Frankfort Regional Office
(502) 564-3358

Hazard Regional Office
(606) 435-6022

London Regional Office
(606) 878-0157

Louisville Regional Office
(502) 595-4254

Madisonville Regional Office
(502) 824-7532

Morehead Regional Office
(606) 784-6634

Paducah Regional Office
(502) 898-8468

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